

National Grid SA-CO **PRODUCTION FILE**

Contractor : ABB Contracting Co.

Project : SS 8709- 132/13.8kV in Alkharj

Contract No : 11131113/00

Substation : 8709

**Subject : 132kV Busbar Protection Set-
Relay Panel -6**





POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CLIENT : SAUDI ELECTRICITY COMPANY CENTRAL OPERATING AREA
CONTRACTOR : ABB Contracting Co
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : Assembly Drawing - +BBP2-6
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

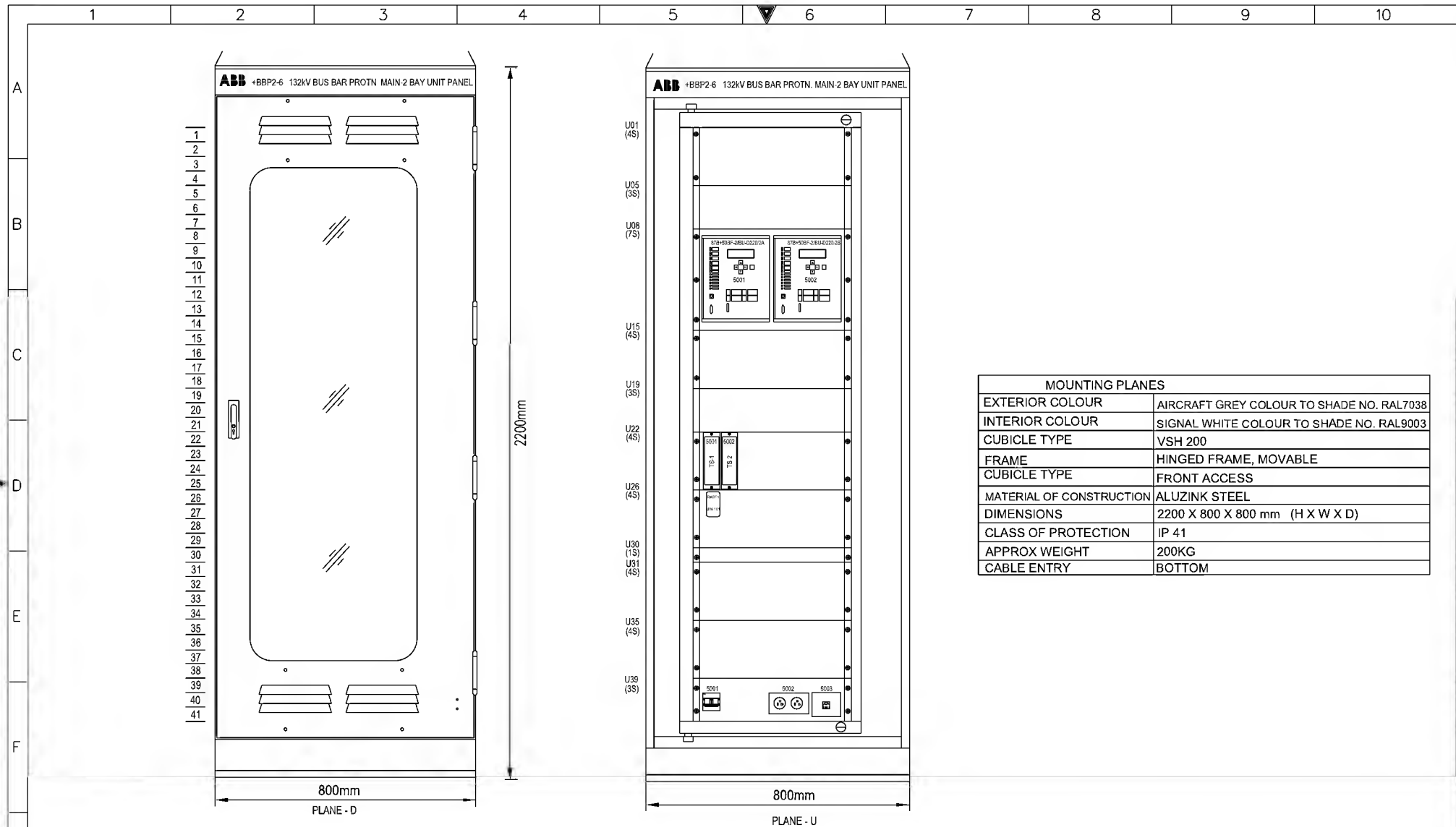
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6
S/S 8709 S-13656
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

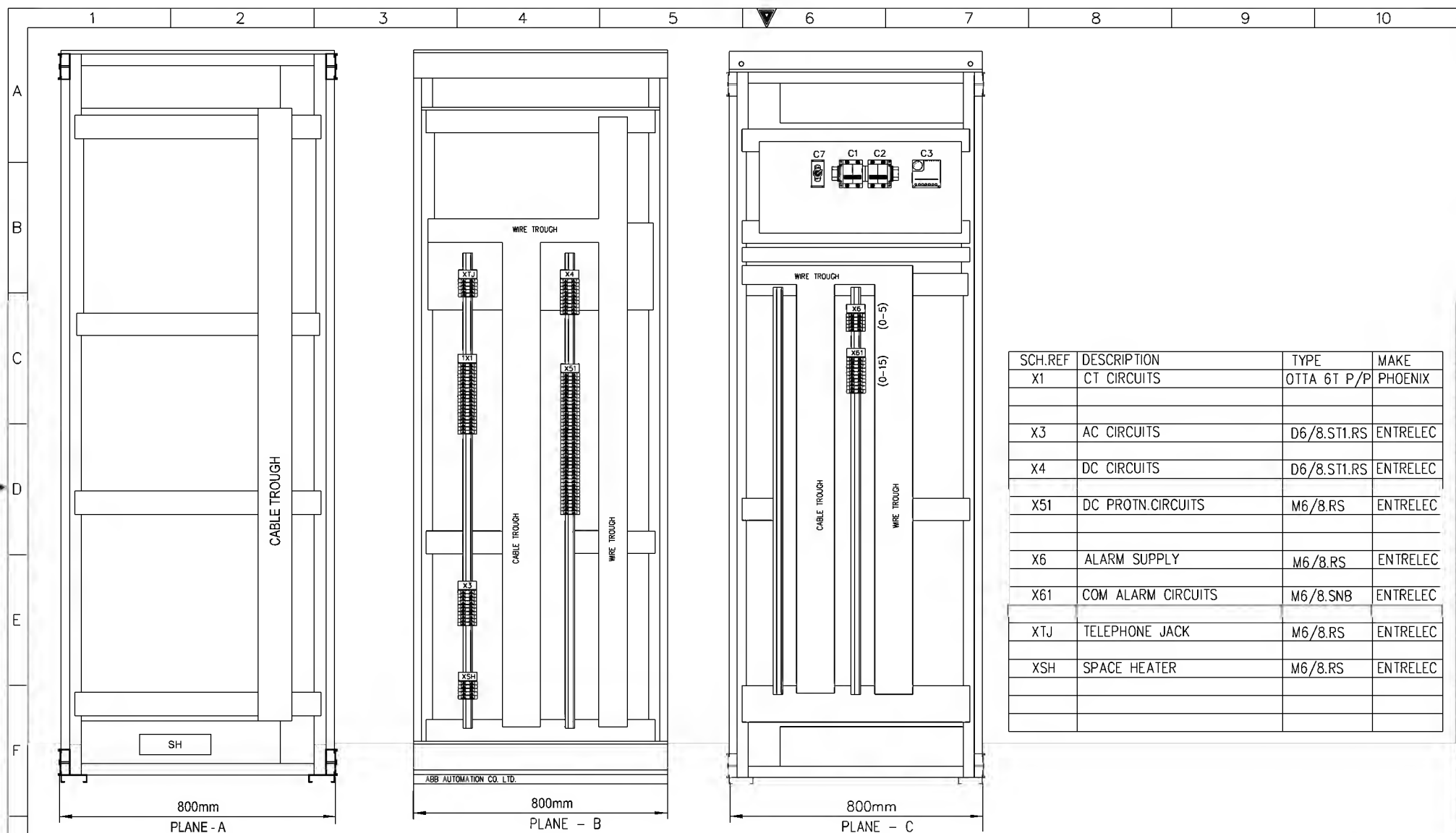


INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323015	SHT 001	01

NG/D2-D (2012/01)
DMS VECTOR NGD200

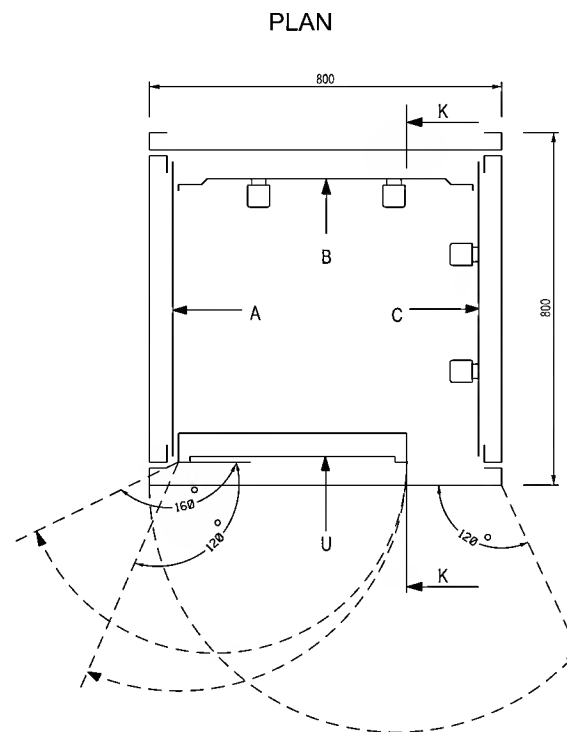


AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ	CHECKED BY KVR		
00	13 14	FOR APPROVAL		DATE STARTED 11.04.2013	DATE COMPLETED _____	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	INDEX
REV. NO.	DATE	DESCRIPTION		PRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	S/S 8709	PLANT NO.
						RIYADH	DRAWING NUMBER
						SAUDI ARABIA	



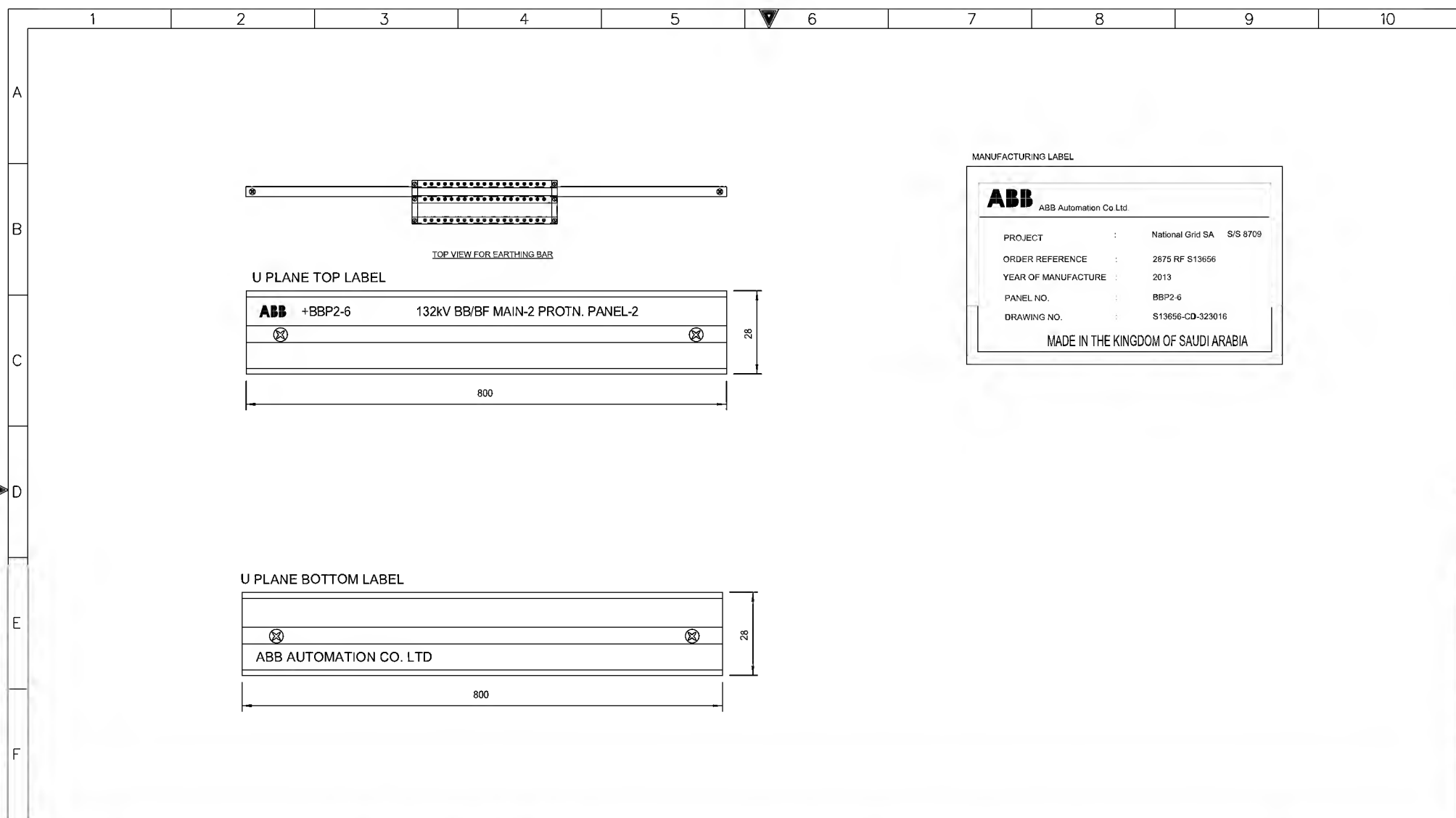
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51	DC PROTN.CIRCUITS	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	COM ALARM CIRCUITS	M6/8.SNB	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING			الشركة الوطنية لنقل الكهرباء		
01 13 49			DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6			National Grid sa		
00 13 14			DATE STARTED 11.04.2013		DATE COMPLETED _____		S/S 8709 S-13656			INDEX PLANT NO. DRAWING NUMBER		
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			SHEET NO. SHT CONT		
										REV. NO.		
										G02 G03 01		



NG/D2-D (2012/01)

DMS	VECTOR	NGD200
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MANUFACTURING LABEL

ABB ABB Automation Co Ltd.	
PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE :	2013
PANEL NO. :	BBP2-6
DRAWING NO. :	S13656-CD-323015
MADE IN THE KINGDOM OF SAUDI ARABIA	

AS-BUILT BY

DATE

CONTRACT NO.

I113I113/00

JOB ORDER NO.

S-13656

01

13 49

00

13 14

FACTORY ASBUILT

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY

RIZ

CHECKED BY

KVR

DATE STARTED

1.04.2013

DATE COMPLETED

OPRG. DEPT.

CTPD

ENG. DEPT.

AUT-PSAC

ASSEMBLY DRAWING

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6


S/S 8709

S-13656

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

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-

C421

CD-323015

G04

L00

01



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CLIENT : SAUDI ELECTRICITY COMPANY CENTRAL OPERATING AREA
CONTRACTOR : ABB Contracting Co
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : LIST OF APPARATUS - +BBP2-6
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6
S/S 8709 S-13656
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323015	SHT L00	01
			CONT. L01	

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

	1	2	3	4	5	6	7	8	9	10
A	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	1	U08.5001	87B+50BF-2/BU-D220/2A	RELAY CUBICLE- +BBP2-6 FOR 132KV 5B/BF MAIN-2 ACCOMODATING THE FOLLOWING		293,294	2	VSH 200	ABB	
		U08.5002	87B+50BF-2/BU-D220/2B	BAY UNIT FOR NUMERICAL BUSBAR PROTECTION WITH FOLLOWING		295,296		7SS523	SIEMENS	7SS5231-5CA01-1AA1/GG
				HIGH TROUGH-FAULT STABILITY EVEN IN CASE OF CT SATURATION.						
				NEUTRAL CURRENT CRITERION INSTANTANEOUS VALUES FOR FAULT RECORDING.						
				DISTURBANCE FREE AND FAST DATA TRANSFER TO & FROM CENTRAL UNIT						
				PHASE SEGRAGATED MEASUREMENT						
				REDUCE CT PERFORMANCE REQUIREMENTS						
				BUILT IN HUMAN MACHINE INTERFACE						
				BUILT IN BREAKER FAILURE FUNCTION.						
B				END FAULT PROTECTION FUNCTION						
				DISTURBANCE RECORDER						
				BINARY OUTPUT : 20						
				BINARY OUTPUT : 6+2-WD						
				FULLY NUMERICAL SIGNAL PROCESSING						
				RATED CURRENT : 1A						
				AUX. VOLTAGE : 60-250V DC						
				RATED FREQUENCY : 60HZ						
	2	U22.101	TS-1	TEST SWITCH FOR 87B+50BF-2/BU-D220/2A RELAY		293	2	MMLG02	ALSTOM	MMLG02 R1AA 0001D
		U22.102	TS-2	TEST SWITCH FOR 87B+50BF-2/BU-D220/2B RELAY		295				
C										
	3	U26.101	74BF-2/BU-D220	DUAL TARGET RELAY FOR 87B+50BF-2/D220		235	1	RXSF 1	ABB	RK 271 019-AN
				AUXILIARY VOLTAGE : 110-125V DC						
				CONTACT DATA : 1NO + 2NC						
				FLAG : SELF RESET, REVERSE						
D										
E										
F										

AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6		INDEX PLANT NO. DRAWING NUMBER - C421 CD-323015	
00	13 14	FOR APPROVAL		DATE STARTED 11.04.2013 DATE COMPLETED _____		S/S 8709 S-13656		SHEET NO. REV. NO. SHT CONT. L01 L02 01	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		NG/D2-D (2012/01) NGD200	

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B										
C										
D										
E										
F										
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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	INDEX	PLANT NO.
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013	DATE COMPLETED	S/S 8709 S-13656		DRAWING NUMBER
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA	-	CD-323015

SHEET NO.		REV. NO.
SHT CONT.	L04 L05	01

NG/D2-D (2012/01)
DMS VECTOR NGD200

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B										
C										
D										
E										
F										
G										

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	LIST OF APPARATUS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6		INDEX	PLANT NO.
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013 DATE COMPLETED _____	S/S 8709 S-13656		DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		- C421	CD-323015
						REV. NO.	01

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POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

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414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
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CLIENT : SAUDI ELECTRICITY COMPANY CENTRAL OPERATING AREA
CONTRACTOR : ABB Contracting Co
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : SCHEMATICS DRAWINGS - +BBP2-6
[132KV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL]

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6
S/S 8709 S-13656
RIYADH SAUDI ARABIA


الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-323016	SHT 001	01

NG/D2-0 (2012/01)
DMS VECTOR NGD200

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A	<table><tr><th>CONTENTS</th><th>ABB SHT.NO.</th><th>REV.00</th><th>REV.01</th><th>REV.02</th></tr><tr><td>COVER SHEET</td><td>000</td><td>X</td><td>X</td><td></td></tr><tr><td>CONTENTS SHEET</td><td>001</td><td>X</td><td>X</td><td></td></tr><tr><td>GRAPHICAL SYMBOLS FOR DIAGRAMS</td><td>011</td><td>X</td><td>X</td><td></td></tr><tr><td>GRAPHICAL SYMBOLS FOR DIAGRAMS</td><td>012</td><td>X</td><td>X</td><td></td></tr><tr><td>COMMON LEGEND</td><td>013</td><td>X</td><td>X</td><td></td></tr><tr><td>FERRULE AND WIRING DETAILS</td><td>014</td><td>X</td><td>X</td><td></td></tr><tr><td>DRAWING REFERENCES</td><td>015</td><td>X</td><td>X</td><td></td></tr><tr><td>DRAWING REFERENCES</td><td>016</td><td>X</td><td>X</td><td></td></tr><tr><td>PRIMARY SYSTEM</td><td>051</td><td>X</td><td>X</td><td></td></tr><tr><td>AC SUPPLY FOR ILLUMINATION & POWER SOCKET</td><td>211</td><td>X</td><td>X</td><td></td></tr><tr><td>CUB. LIGHTING, HEATER & SOCKET ALARM CKT.</td><td>212</td><td>X</td><td>X</td><td></td></tr><tr><td>DC SUPPLY DISTRIBUTION</td><td>216</td><td>X</td><td>X</td><td></td></tr><tr><td>CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D220/2A</td><td>221</td><td>X</td><td>X</td><td></td></tr><tr><td>CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D220/2B</td><td>222</td><td>X</td><td>X</td><td></td></tr><tr><td>87B+50BF-2/BU-D220/2A PROTN.RELAY-BINARY INPUTS</td><td>231</td><td>X</td><td>X</td><td></td></tr><tr><td>87B+50BF-2/BU-D220/2A PROTN.RELAY-BINARY INPUTS</td><td>232</td><td>X</td><td>X</td><td></td></tr><tr><td>87B+50BF-2/BU-D220/2B PROTN.RELAY-BINARY INPUTS</td><td>234</td><td>X</td><td>X</td><td></td></tr><tr><td>87B+50BF-2/BU-D220/2B PROTN.RELAY-BINARY INPUTS</td><td>235</td><td>X</td><td>X</td><td></td></tr><tr><td>COMMON ALARM CIRCUITS</td><td>292</td><td>X</td><td>X</td><td></td></tr><tr><td>BLOCK REFERENCE 87B+50BF-2/BU-D220/2A</td><td>293</td><td>X</td><td>X</td><td></td></tr><tr><td>BLOCK REFERENCE 87B+50BF-2/BU-D220/2A</td><td>294</td><td>X</td><td>X</td><td></td></tr><tr><td>BLOCK REFERENCE 87B+50BF-2/BU-D220/2B</td><td>295</td><td>X</td><td>X</td><td></td></tr><tr><td>BLOCK REFERENCE 87B+50BF-2/BU-D220/2B</td><td>296</td><td>X</td><td>X</td><td></td></tr><tr><td>TERMINAL BLOCKS REFERENCE</td><td>301</td><td>X</td><td>X</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table>					CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02	COVER SHEET	000	X	X		CONTENTS SHEET	001	X	X		GRAPHICAL SYMBOLS FOR DIAGRAMS	011	X	X		GRAPHICAL SYMBOLS FOR DIAGRAMS	012	X	X		COMMON LEGEND	013	X	X		FERRULE AND WIRING DETAILS	014	X	X		DRAWING REFERENCES	015	X	X		DRAWING REFERENCES	016	X	X		PRIMARY SYSTEM	051	X	X		AC SUPPLY FOR ILLUMINATION & POWER SOCKET	211	X	X		CUB. LIGHTING, HEATER & SOCKET ALARM CKT.	212	X	X		DC SUPPLY DISTRIBUTION	216	X	X		CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D220/2A	221	X	X		CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D220/2B	222	X	X		87B+50BF-2/BU-D220/2A PROTN.RELAY-BINARY INPUTS	231	X	X		87B+50BF-2/BU-D220/2A PROTN.RELAY-BINARY INPUTS	232	X	X		87B+50BF-2/BU-D220/2B PROTN.RELAY-BINARY INPUTS	234	X	X		87B+50BF-2/BU-D220/2B PROTN.RELAY-BINARY INPUTS	235	X	X		COMMON ALARM CIRCUITS	292	X	X		BLOCK REFERENCE 87B+50BF-2/BU-D220/2A	293	X	X		BLOCK REFERENCE 87B+50BF-2/BU-D220/2A	294	X	X		BLOCK REFERENCE 87B+50BF-2/BU-D220/2B	295	X	X		BLOCK REFERENCE 87B+50BF-2/BU-D220/2B	296	X	X		TERMINAL BLOCKS REFERENCE	301	X	X																
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G	AS-BUILT BY _____		DATE _____	CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	CONTENTS SHEET		الشركة الوطنية لنقل الكهرباء						نقل الكهرباء					
						32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6		National Grid sa											
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		S/S 8709 S-13656		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.				
	00	13 14	FOR APPROVAL		DATE STARTED 11.04.2013 DATE COMPLETED _____		RIYADH SAUDI ARABIA		-	C421	CD-323016		SHT CONT.		01				
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC						001 011							
														NG/D2-D (2012/01)					
														DMS		VECTOR		NGD200	

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AS-BUILT BY	DATE	CONTRACT NO.	11131113/00	JOB ORDER NO.	S-13656	GRAPHICAL SYMBOLS FOR DIAGRAMS				الشركة الوطنية لنقل الكهرباء				نقل الكهرباء			
01	13 49	FACTORY ASBUILT	DRAWN BY	RIZ	CHECKED BY	KVR	32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6				National Grid sa						
00	13 14	FOR APPROVAL	DATE STARTED	11.04.2013	DATE COMPLETED		S/S 8709 S-13656				INDEX						
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC	RIYADH SAUDI ARABIA				PLANT NO.						
											DRAWING NUMBER						
											CD-323016						
											SHT						
											CDT						
											REV. NO.						
											01						
											NG/D2-0 (2012/01)						
											DMS						
											VECTOR						
											NGD200						

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AS-BUILT BY	DATE	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	GRAPHICAL SYMBOLS FOR DIAGRAMS		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013 DATE COMPLETED	S/S 8709 S-13656		-	C421	CD-323016	012/013	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA						

NG/D2-D (2012/01)
DMS VECTOR NGD200

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LEGENDS

±R1	DC SUPPLY - MAIN PROTECTION
±R2	DC SUPPLY - SECONDARY PROTECTION
±R3	DC SUPPLY - BACK UP PROTECTION
±IT	DC SUPPLY - INTER TRIP
FL	DC SUPPLY - FLASHING CIRCUIT
BB RS±	DC SUPPLY - BUS BAR - PROTECTION RESET
BB CBF±/CBF±	DC SUPPLY - CBF PROTECTION
R	RESET BUS - ALARM SYSTEM
CR	CONTROL ROOM
ECC	ENERGY CONTROL CENTRE
LOCAL	THE LOCATION OF CONTROLLED DEVICE
REMOTE	ANY OTHER LOCATION NOT LOCAL
ON	CB NORMALLY OPEN AUXILIARY CONTACT
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT
A	COMMON
T	TEST POSITION
S	SERVICE POSITION
CS	CLOSE IN SERVICE POSITION
CT	CLOSE IN TEST POSITION
LS	LOCAL SERVICE
LT	LOCAL TEST
LC	LOCAL CLOSE
LO	LOCAL OPEN
RO	REMOTE OPEN
OP	OPERATE
RE	RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE
 2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS
 2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS
 1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS
 2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS
 2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS
 FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:
 + SIGN FOR DC + WIRE
 - SIGN FOR DC - WIRE

LUGS

A. CT CIRCUITS- RING TYPE
 B. OTHER CIRCUITS - SPADE TYPE

FERULLING

YELLOW TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 - TMSS-1, RE.0)

AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		COMMON LEGEND				الشركة الوطنية لنقل الكهرباء National Grid sa			
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013		DATE COMPLETED _____		S/S 8709 S-13656				-	C421	CD-323016	SHT CONT.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							01

1 2 3 4 5 6 7 8 9 10

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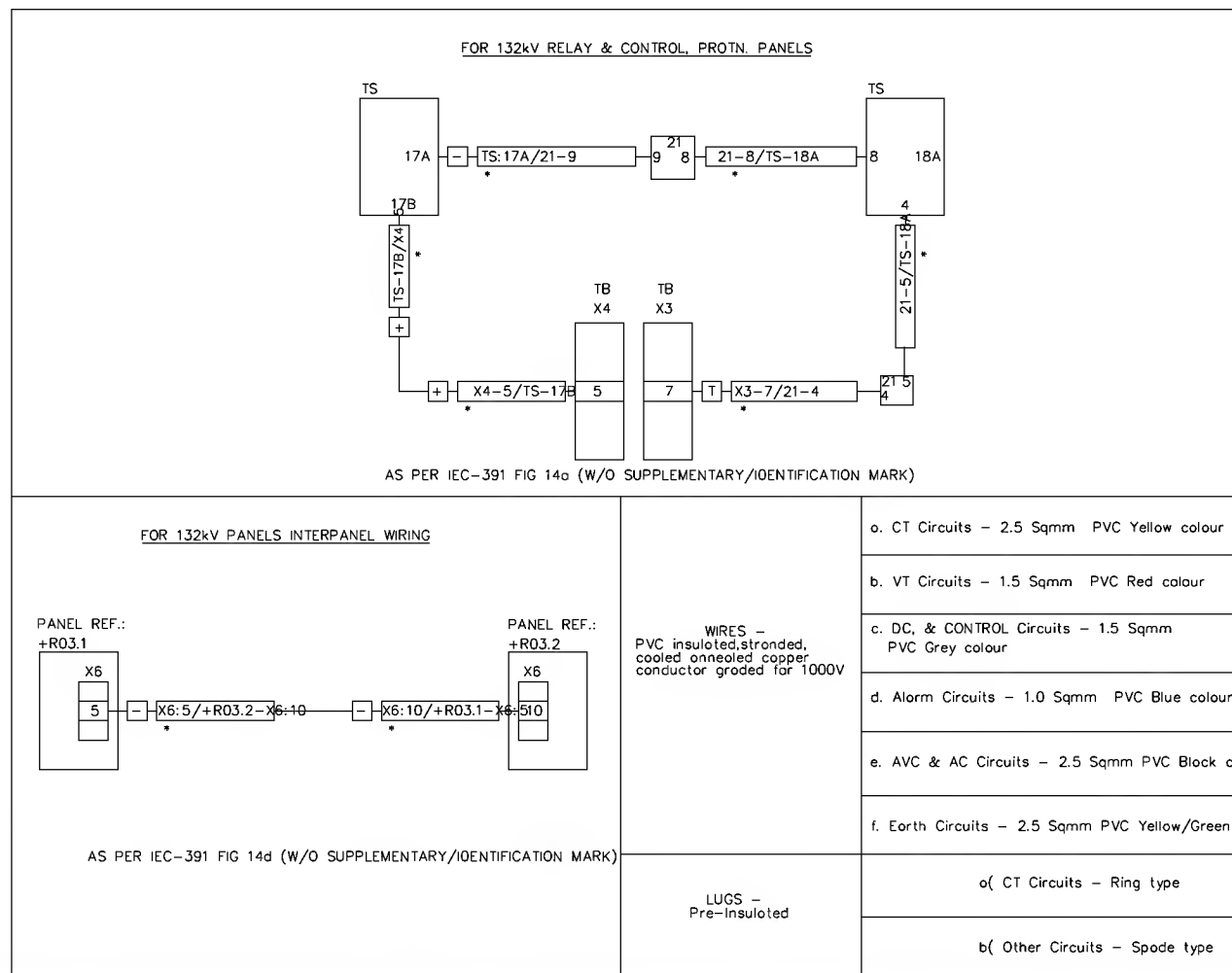
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E

F

G



NOTE:1 ADDITIONAL MARKING AS APPLICABLE
NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE
3.2 mm for 1.5 sq mm wires and
4.2 mm for 2.5 sq mm wires
(As per 31-TMSS-1, REV 0)
NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR
00	13 14		DATE STARTED 11.04.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC


FERRULE AND WIRING DETAILS	
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	S/S 8709
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-323016	014 015
		REV. NO. 01	

NG/02-0 (2012/01)
DMS VECTOR NG0200

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MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8833 13.8KV RELAY PANELS	
	CD-29DD53	13.8KV Capacitor Bank-1 Protection Panel	+CBP-1
	CD-290055	13.8KV Capacitor Bank-2 Protection Panel	+CBP-2
	CD-290057	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-29DD60	13.8 KV ACCS PANEL	+ACCS
	CD-29DD63	13.8KV ACSE PANEL	+ACSE
	CD-29DD71	SCMS Interface Panel	+SCMS
	CD-29DD69	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-290065	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-290067	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02

G

AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT				
00	13 14	FOR APPROVAL				
REV. NO.	DATE	DESCRIPTION				

DRAWN BY RIZ		CHECKED BY KVR	
DATE STARTED 11.04.2013		DATE COMPLETED _____	
OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

DRAWING REFERENCES	
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	
S/S 8709	S-13656
RIYADH	SAUDI ARABIA

نقل الكهرباء

الشركة الوطنية لنقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

-

C421

CD-323016

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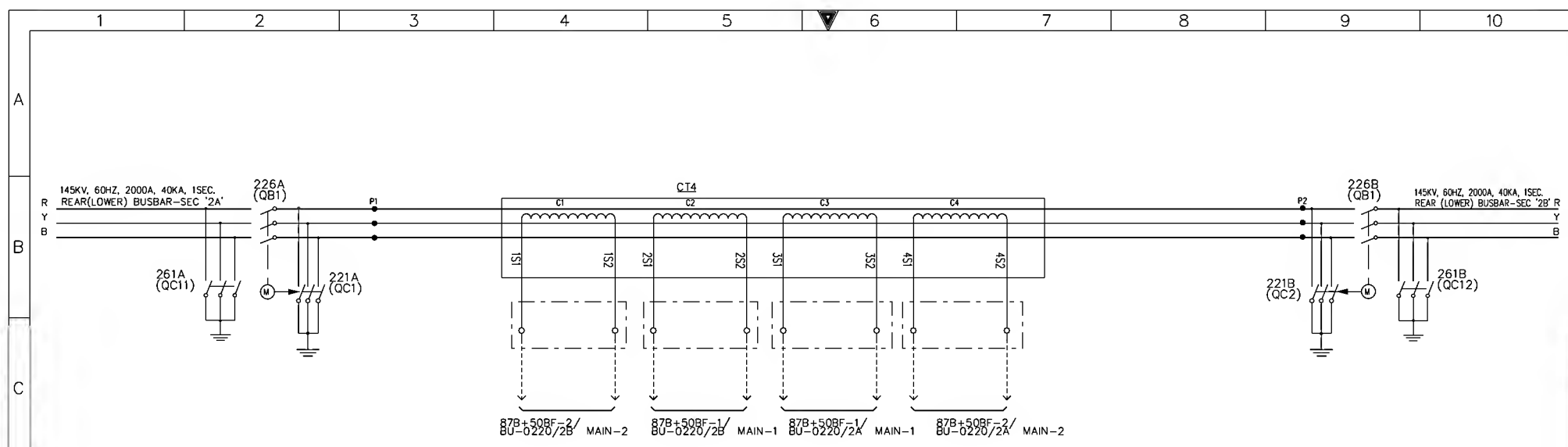
NG/D2-D (2012/01)

DMS

VECTOR

NGD200

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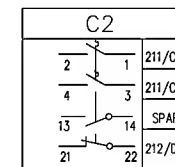
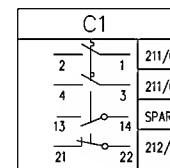
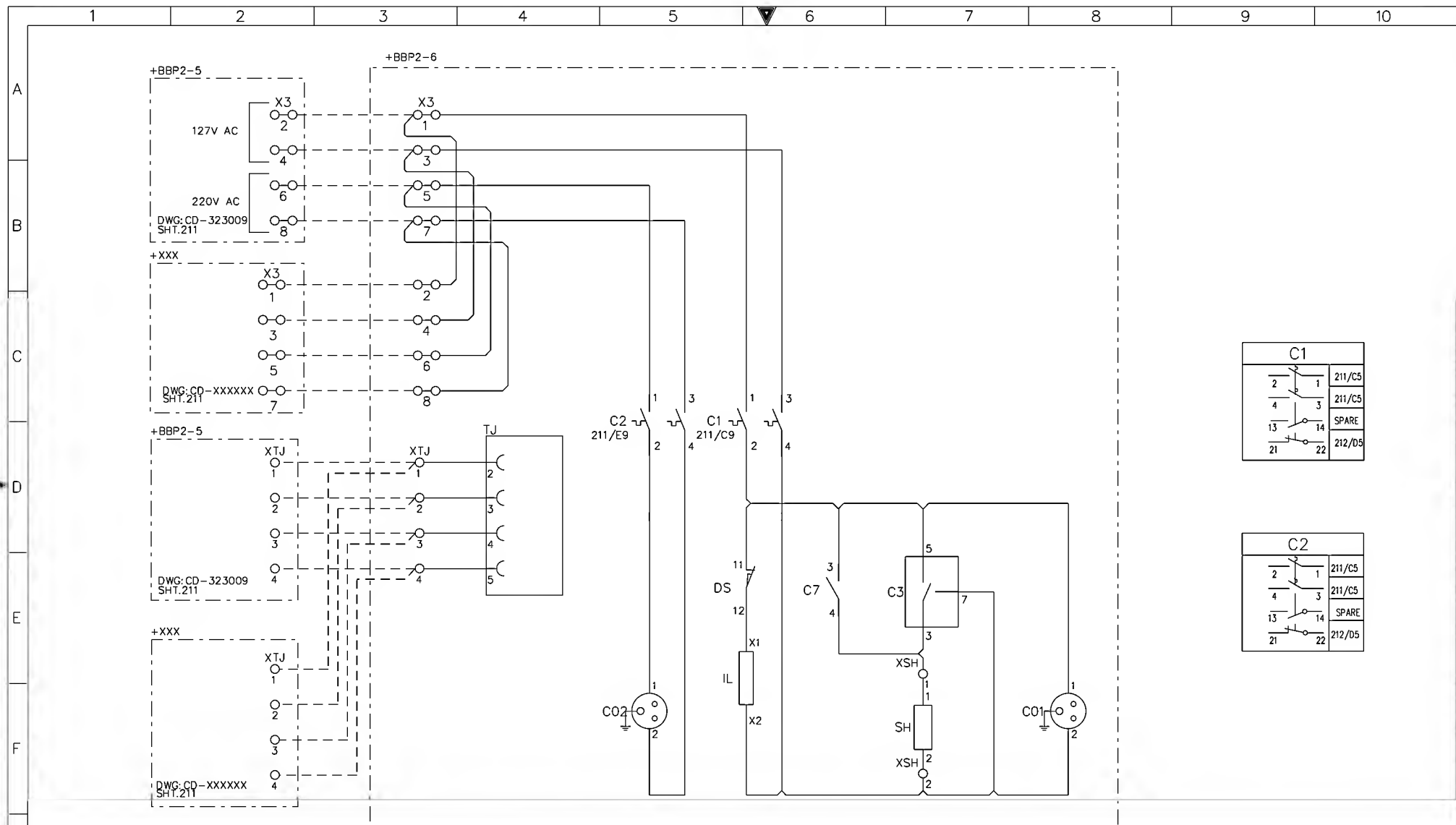


LOCATION OF GIS CT	CT	RATIO	CLASS	VK IN VOLT	Image IN mA @ VK	RCT IN OHMS	BURDEN IN VA	BURDEN IN VA
BUS 2A/2B	CT4 CORE-1	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+508F-2/BU-0220/2B MAIN-2
	CT4 CORE-2	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+508F-1/BU-0220/2B MAIN-1
	CT4 CORE-3	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+508F-1/BU-D220/2A MAIN-1
	CT4 CORE-4	2000/1A	X	>600 at 2000/1A TAP	< = 25	<5	--	87B+508F-2/BU-0220/2A MAIN-2

AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		PRIMARY SYSTEM D220		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa		
01 13 49 FACTORY ASBUILT 00 13 14 FOR APPROVAL			DRAWN BY RIZ CHECKED BY KVR DATE STARTED 11.04.2013 DATE COMPLETED _____		32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6 S/S 8709 S-13656 RIYADH SAUDI ARABIA						
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
							-	C421	CD-323016	051/211	01

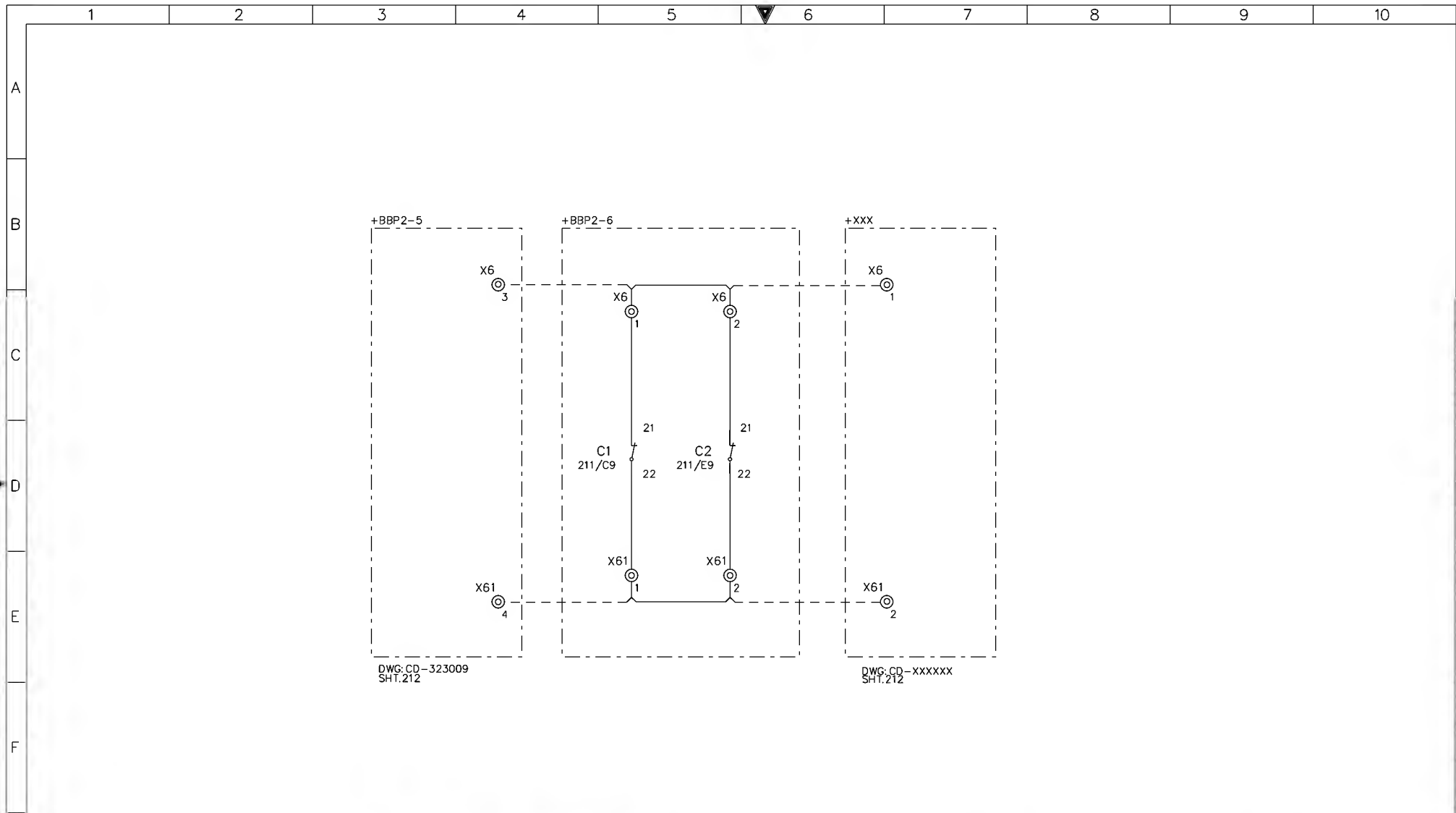
NG/D2-0 (2012/01)
DMS VECTOR NGD200

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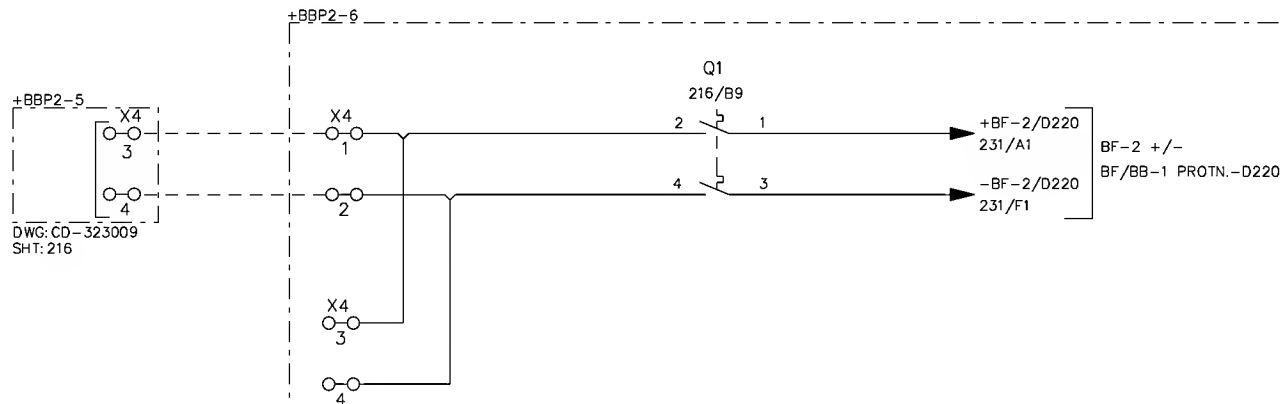


AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	AC SUPPLY FOR ILLUMINATION & POWER SOCKET	
01	13 49	FACTORY ASBUILT		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	
00	13 14	FOR APPROVAL		S/S 8709 S-13656	
REV. NO.	DATE	DESCRIPTION		RIYADH SAUDI ARABIA	
DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 11.04.2013 DATE COMPLETED _____			
PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC					

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
-	C421	CD-323016	211 212	01	



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CUB.LIGHTING,HEATER&SOKET ALARM CKT.				الشركة الوطنية لنقل الكهرباء			
DRAWN BY RIZ CHECKED BY KVR			DATE STARTED 11.04.2013		DATE COMPLETED _____		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6				National Grid sa			
FOR APPROVAL			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		S/S 8709 S-13656				INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
01	13	49	FACTORY ASBUILT				- C421 CD-323016				212 216 01			
00	13	14	FOR APPROVAL				RIYADH SAUDI ARABIA				NG/02-0 (2012/01)			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.		ENG. DEPT.		DMS VECTOR				NG0200			

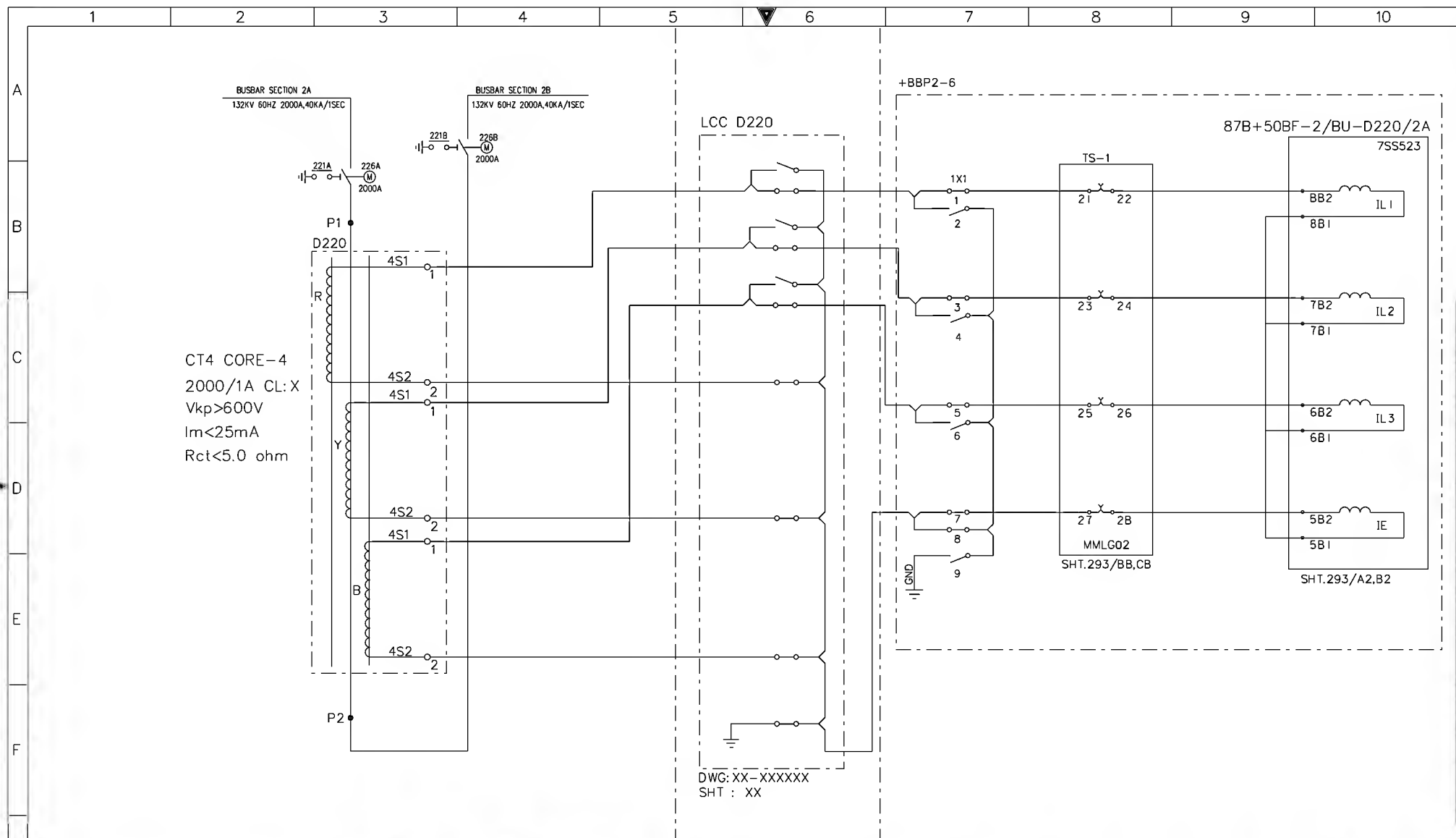


Q1			
2	1	216/B5	
4	3	216/B5	
11	12	292/C4	
21	22	SPARE	

AS-BUILT BY _____			DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13	49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR
00	13	14	FOR APPROVAL		DATE STARTED 11.04.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

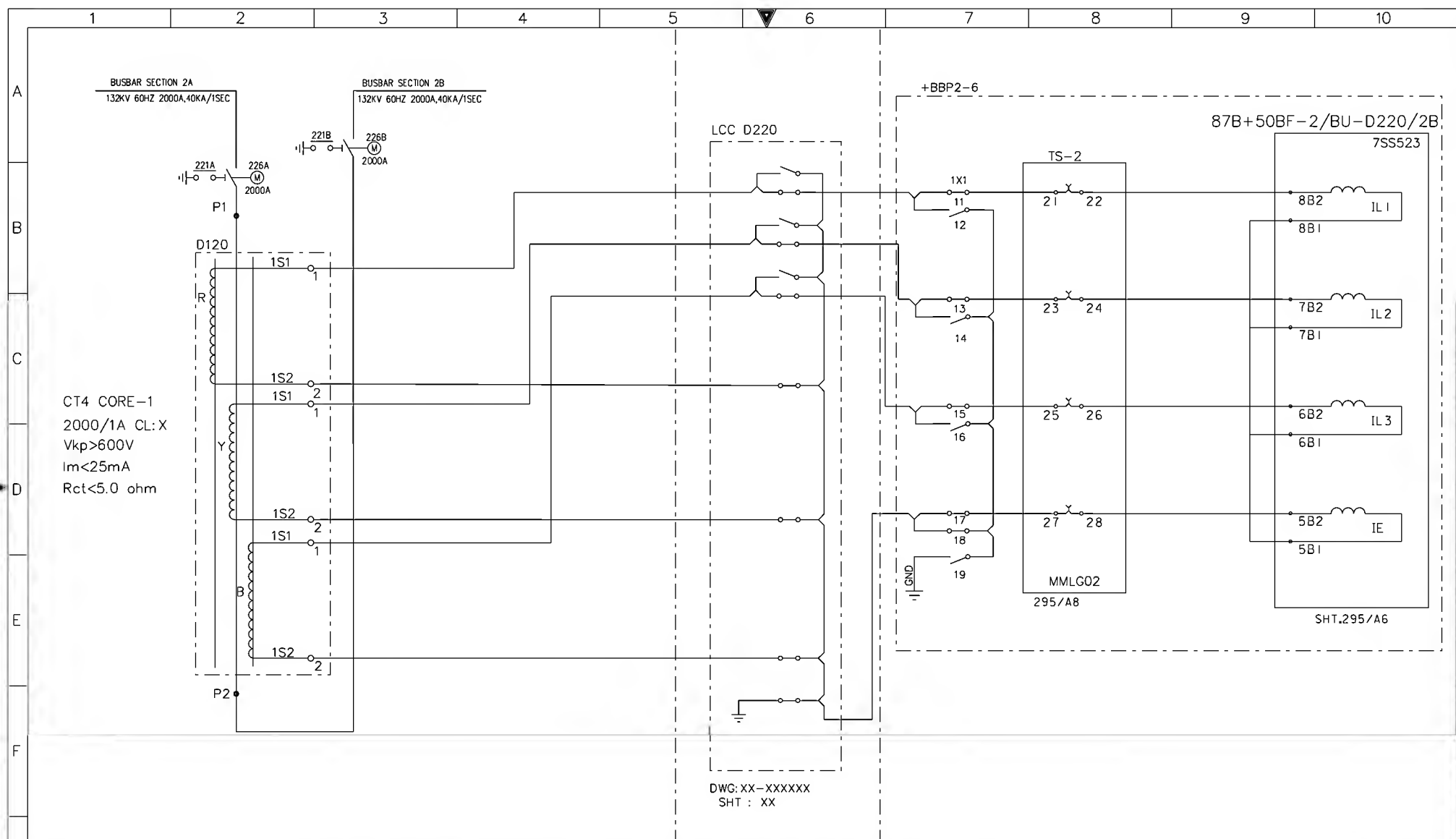
DC SUPPLY DISTRIBUTION	
132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	
S/S 8709	S-13656
RIYADH	SAUDI ARABIA


الشركة الوطنية لنقل الكهرباء					نقل الكهرباء National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-323016		SHT CONT. 216 221		01



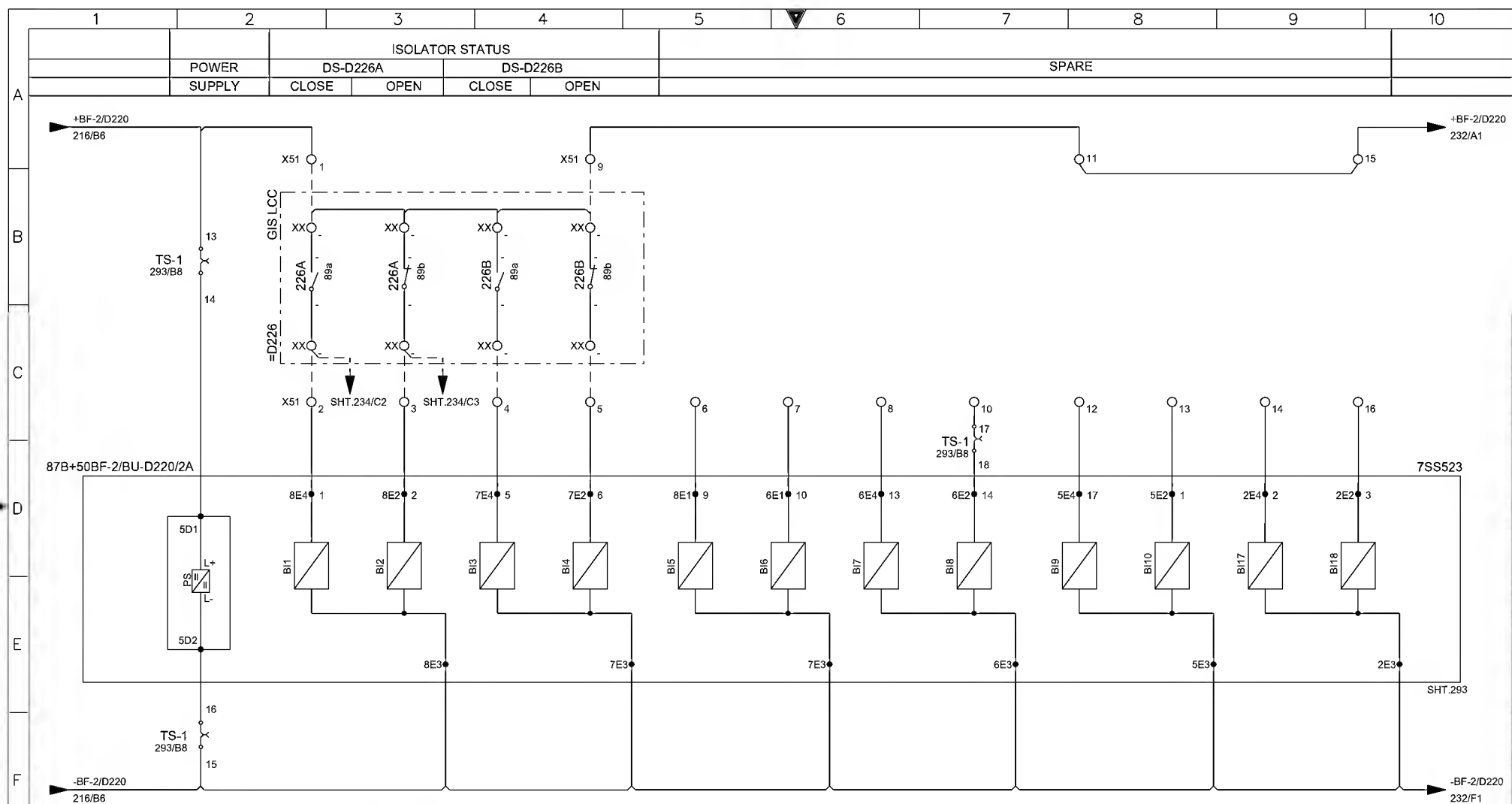
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01 13 49			DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN,MAIN-2 BU PANEL +BBP2-6			National Grid sa			
00 13 14			DATE STARTED 11.04.2013		DATE COMPLETED _____		S/S 8709 S-13656			INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			- C421 CD-323016 221 222 01			
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										DMS VECTOR NGD200			

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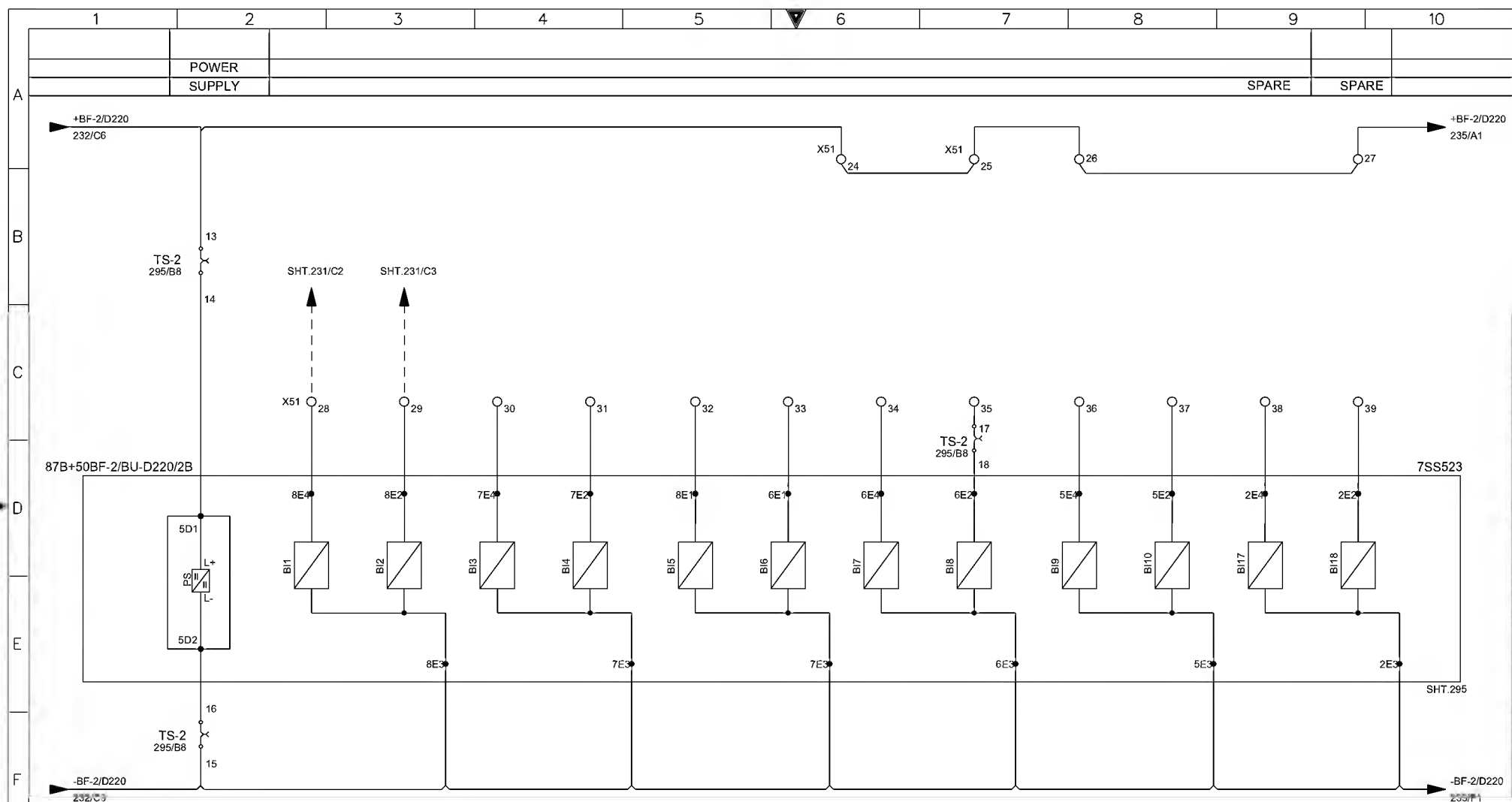


AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		CURRENT TRANSFORMER INPUTS -87B+50BF-2/BU-D220/2B			<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>					
G	01 13 49		FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6								
	00 13 14		FOR APPROVAL		DATE STARTED 1.04.2013 DATE COMPLETED _____		S/S 8709 S-13656								
	REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			- C421 CD-323016			
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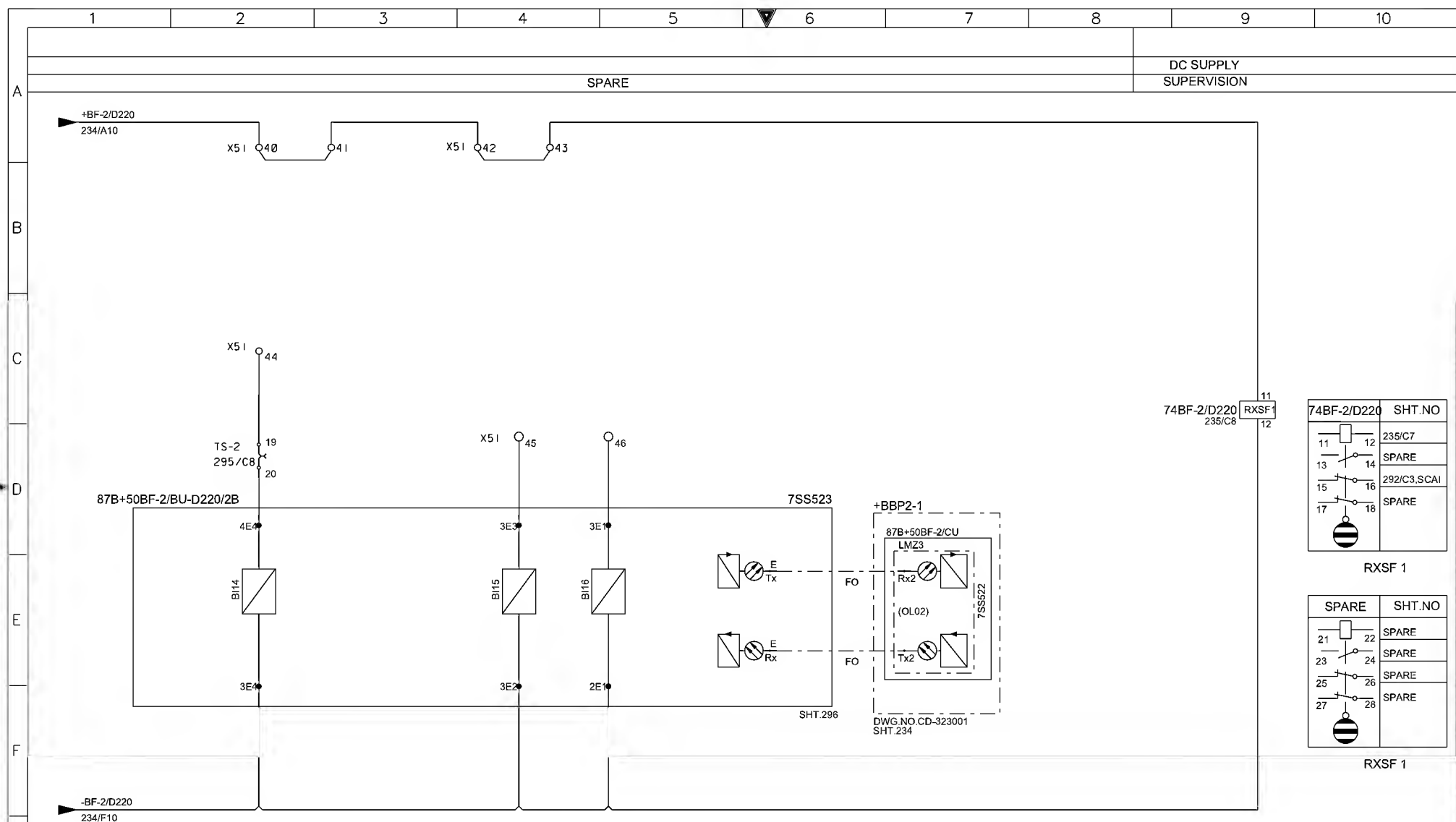


AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	87B+50BF-2/BU-D220/2A PROTN.RELAY - BINARY INPUTS		الشركة الوطنية لنقل الكهرباء	
01	13 49	FACTORY ASBUILT		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6		National Grid sa	
00	13 14	FOR APPROVAL		S/S 8709 S-13656		INDEX	PLANT NO.
REV. NO.	DATE	DESCRIPTION		PRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		DRAWING NUMBER	
				RIYADH SAUDI ARABIA		CD-323016	
						SHEET NO. 231/232	
						REV. NO. 01	



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		87B+50BF-2/BU-D220/2B PROTN.RELAY - BINARY INPUTS				الشركة الوطنية لنقل الكهرباء			
01 13 49			DRAWN BY RIZ		CHECKED BY KVR		32KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6				National Grid sa			
00 13 14			DATE STARTED 11.04.2013		DATE COMPLETED _____		S/S 8709 S-13656				SHT ICONT			
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
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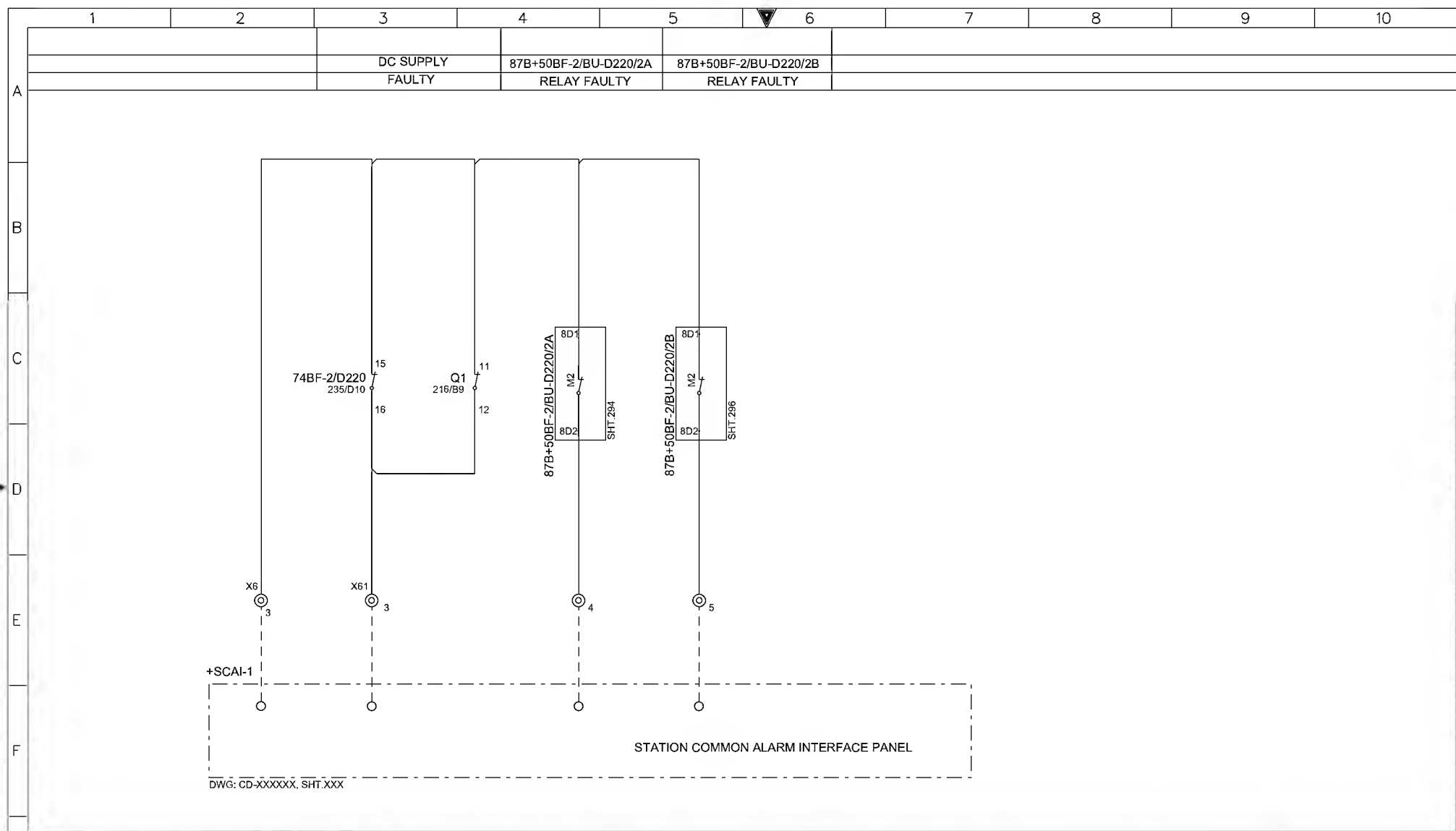
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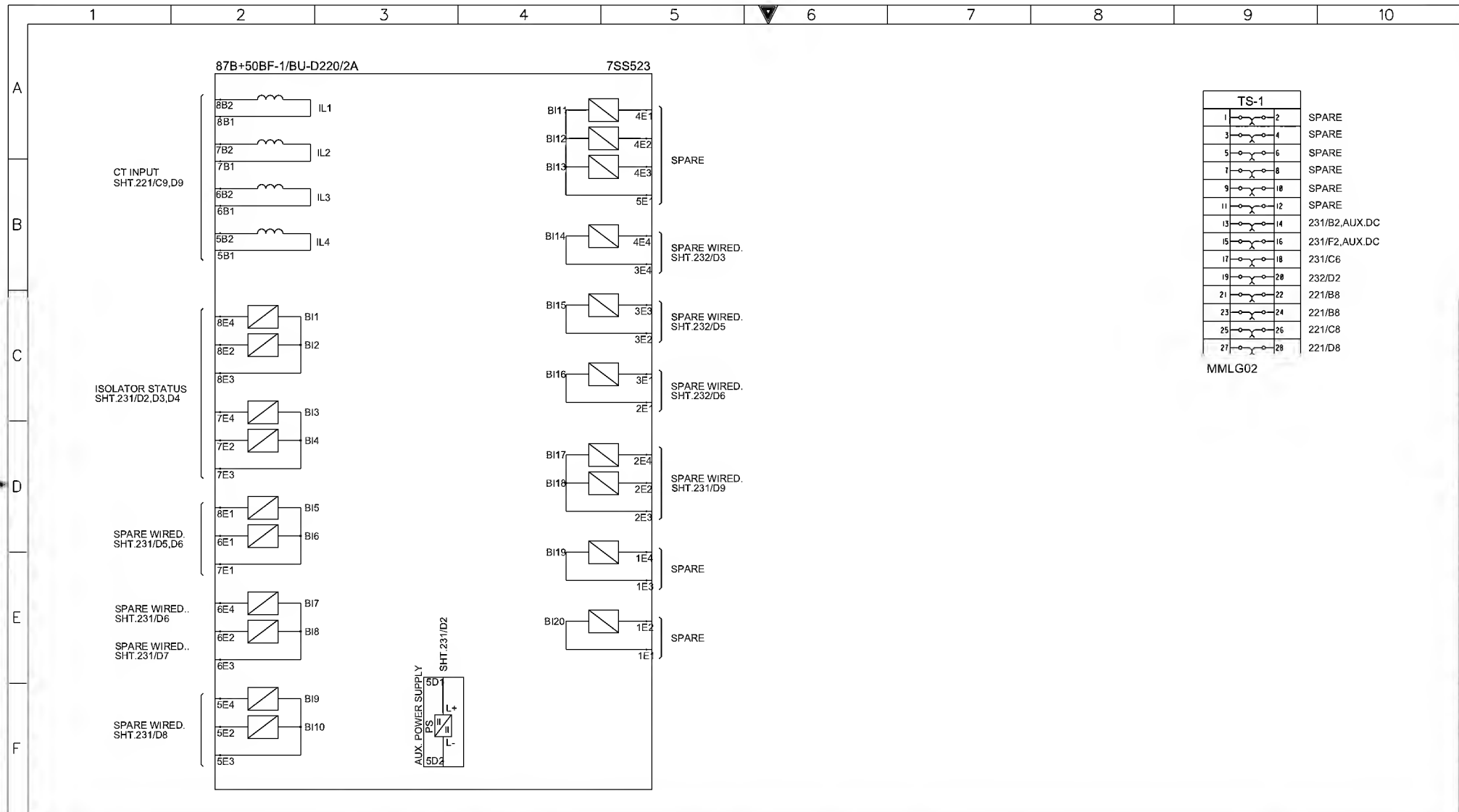
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01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6		National Grid sa			
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013		DATE COMPLETED _____		S/S 8709		S-13656			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH		SAUDI ARABIA			

NG/D2-D (2012/01)
DMS VECTOR NGD200

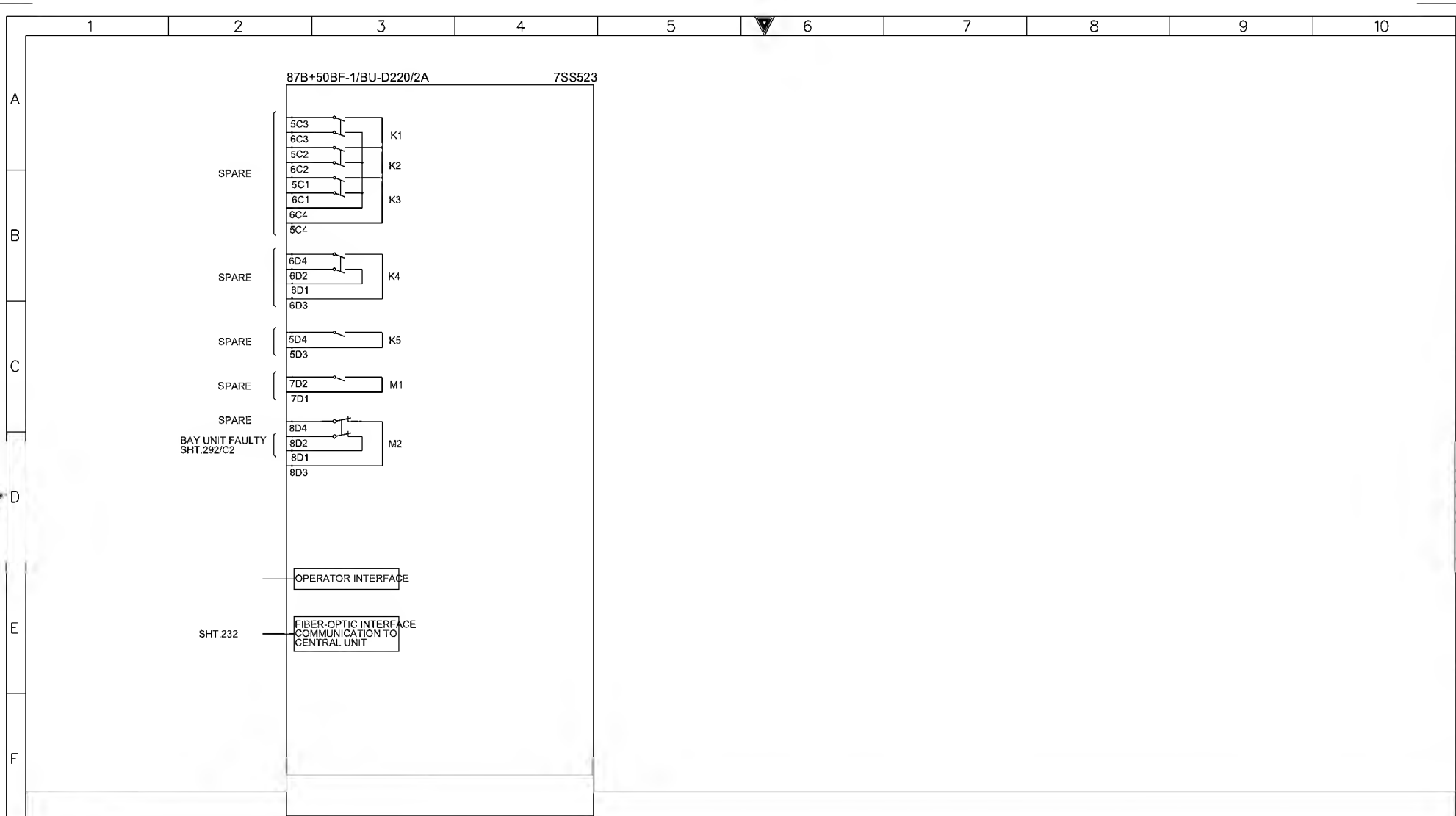
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCUITS			الشركة الوطنية لنقل الكهرباء			
DRAWN BY RIZ CHECKED BY KVR			DATE STARTED 11.04.2013		DATE COMPLETED _____		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6			National Grid sa			
FOR APPROVAL			PRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		S/S 8709 S-13656			INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
REV. NO. DATE DESCRIPTION			RIYADH		SAUDI ARABIA		- C421 CD-323016			292/293 01			



AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00	JOB ORDER NO. S-13656	87B+50BF-2/BU-D220/2A INTERNAL DIAGRAM	الشركة الوطنية لنقل الكهرباء National Grid sa			
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013	DATE COMPLETED	S/S 8709 S-13656	-	C421	CD-323016	293/294
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA	NG/D2-D (2012/01) DMS VECTOR NGD200			



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 14	FOR APPROVAL	DATE STARTED 11.04.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CIPD	ENG. DEPT. AUT-PSAC

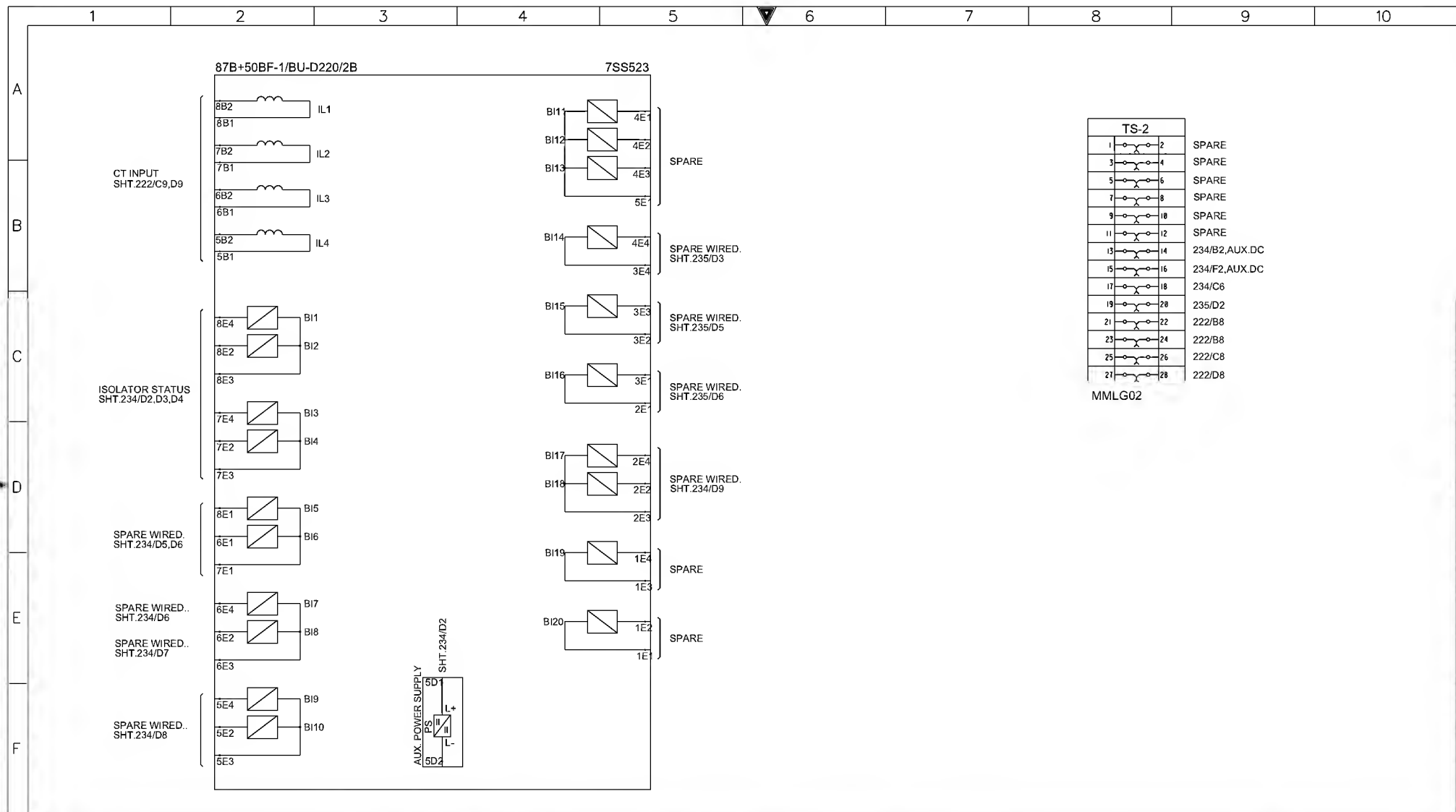
87B+50BF-2/BU-D220/2A INTERNAL DIAGRAM



132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6	S/S 8709	S-13656
RIYADH	SAUDI ARABIA	

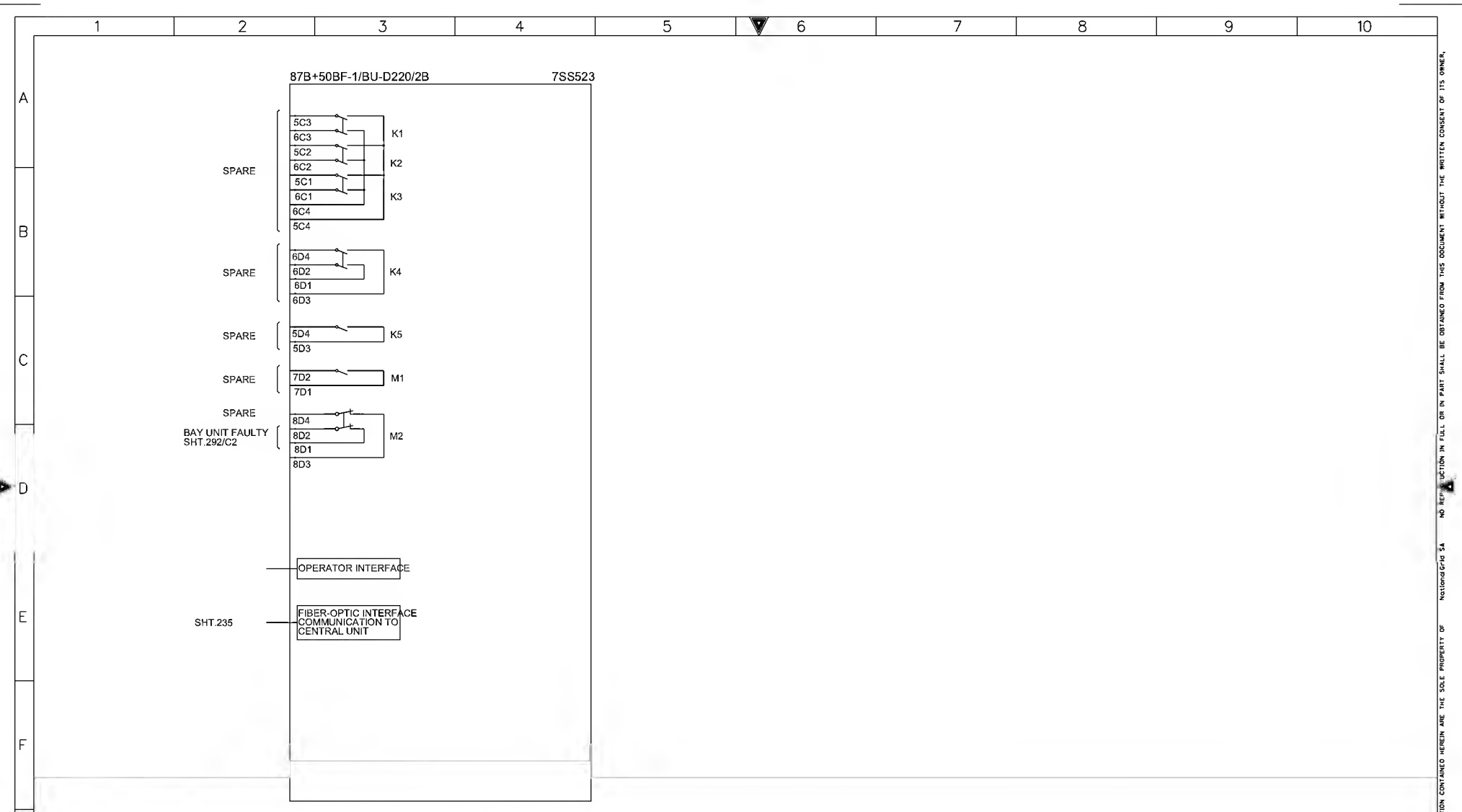
الشركة الوطنية لنقل الكهرباء		National Grid SA	
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656		87B+50BF-2/BU-D220/2B INTERNAL DIAGRAM			<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div></div> <div>National Grid sa</div>																		
G	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-2 BU PANEL +BBP2-6			INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.										
	00	13 14	FOR APPROVAL		DATE STARTED 11.04.2013 DATE COMPLETED _____		S/S 8709 S-13656			-		C421		CD-323016		SHT. CONT.		01										
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CKT.</th></tr> <tr><td>212/E5</td><td>1</td></tr> <tr><td>212/E5</td><td>2</td></tr> <tr><td>292/E4</td><td>3</td></tr> <tr><td>292/E5</td><td>4</td></tr> <tr><td>292/E7</td><td>5</td></tr> <tr><td>SPARE</td><td>6</td></tr> <tr><td>SPARE</td><td>7</td></tr> <tr><td>SPARE</td><td>8</td></tr> <tr><td>SPARE</td><td>9</td></tr> <tr><td>SPARE</td><td>10</td></tr> <tr><td>SPARE</td><td>11</td></tr> <tr><td>SPARE</td><td>12</td></tr> <tr><td>SPARE</td><td>13</td></tr> <tr><td>SPARE</td><td>14</td></tr> <tr><td>SPARE</td><td>15</td></tr> </table>		REFERENCE	X61 ALM. CKT.	212/E5	1	212/E5	2	292/E4	3	292/E5	4	292/E7	5	SPARE	6	SPARE	7	SPARE	8	SPARE	9	SPARE	10	SPARE	11	SPARE	12	SPARE	13	SPARE	14	SPARE	15	<table border="1" style="width:100%; border-collapse: collapse;"> <tr><th>REFERENCE</th><th>X3 AC CKT.</th></tr> <tr><td>211/A3</td><td>1</td></tr> <tr><td>211/A7</td><td>2</td></tr> <tr><td>211/A3</td><td>3</td></tr> <tr><td>211/A7</td><td>4</td></tr> <tr><td>211/B3</td><td>5</td></tr> <tr><td>211/B7</td><td>6</td></tr> <tr><td>211/B3</td><td>7</td></tr> <tr><td>211/B7</td><td>8</td></tr> <tr><td>SPARE</td><td>9</td></tr> <tr><td>SPARE</td><td>10</td></tr> </table>		REFERENCE	X3 AC CKT.	211/A3	1	211/A7	2	211/A3	3	211/A7	4	211/B3	5	211/B7	6	211/B3	7	211/B7	8	SPARE	9	SPARE	10	<table border="1" style="width:100%; border-collapse: collapse;"> <tr><th>REFERENCE</th><th>XTJ T.JACK</th></tr> <tr><td>211/C3</td><td>1</td></tr> <tr><td>211/D3</td><td>2</td></tr> <tr><td>211/D3</td><td>3</td></tr> <tr><td>211/D3</td><td>4</td></tr> <tr><td>SPARE</td><td>5</td></tr> </table>		REFERENCE	XTJ T.JACK	211/C3	1	211/D3	2	211/D3	3	211/D3	4	SPARE	5	<table border="1" style="width:100%; border-collapse: collapse;"> <tr><th>REFERENCE</th><th>XSH SPACE HEATER</th></tr> <tr><td>211/E6</td><td>1</td></tr> <tr><td>211/F6</td><td>2</td></tr> <tr><td>SPARE</td><td>3</td></tr> </table>		REFERENCE	XSH SPACE HEATER	211/E6	1	211/F6	2	SPARE	3	<table border="1" style="width:100%; border-collapse: collapse;"> <tr><th>REFERENCE</th><th>X6 ALM. CKT.</th></tr> <tr><td>212/C5</td><td>1</td></tr> <tr><td>212/C5</td><td>2</td></tr> <tr><td>292/E3</td><td>3</td></tr> <tr><td>SPARE</td><td>4</td></tr> <tr><td>SPARE</td><td>5</td></tr> </table>		REFERENCE	X6 ALM. CKT.	212/C5	1	212/C5	2	292/E3	3	SPARE	4	SPARE	5
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